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The Priority Certificate

This certificate is to approve the Priority of following Invention that has been submitted to our office, relative documents see attached.

Filing Date: Oct. 31, 2002
Application No.: 02 1 38579.3
Type of the application: Invention Patent
Name of the invention: Sliding Miter Saw
Applicant: Positec Power Tools (Suzhou) Co., Ltd.
Inventor: Xin Wang

Approved by:

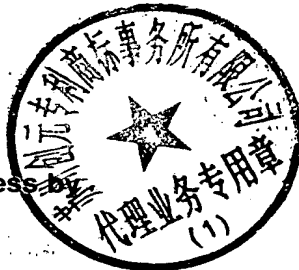
Mr. Wang Rongchuan

The president of State Intellectual Property Bureau
Of P.R.China
Oct. 16th, 2003

Translated and witness by

Mr. Sun Fangwei

The attorney of Patent Business Agency (Suzhou)
Jun. 16th, 2003



Abstract

A sliding miter saw, which comprises: a base device, a motor, a saw blade [8], a bracket for saw unit [6] and a ram [4], a guiding groove is provided with a turntable [2] along its diametrical direction, said ram [4] is slideable received in said guiding groove, a rear end portion of said ram [4] is connected with a lower portion of a supporting member [5]. By employing the structure of said ram sliding in said guiding groove, said supporting member for supporting said bracket for saw unit is possible to be made thick and able to get a perfect rigidity, a front end portion of said ram always lies under said saw blade, said ram moves backward in synchronism when said saw unit slides backward, so this structure is able to spare the operating space and freighting space.

CLAIMS

1. A sliding miter saw, comprising:

a base device including a base [1] and a turntable [2] which is pivotable connected with said base [1];

a motor including an armature which has a first rotating axis;

a saw blade [8] having a second rotating axis;

a bracket for saw unit [6], on which said saw blade [8] and said motor are provided, said first rotating axis is parallel with and spaced from said second rotating axis, said motor is connected with said saw blade [8] via transmission device;

a supporting member [5], on which a hinge pivot shaft is provided and said bracket for saw unit [6] hinging with said supporting member;

characterized in that:

said sliding miter saw also includes a ram [4], a guiding groove provided in said turntable [2] in a substantial diametrical direction, said ram [4] is slideable received in said guiding groove, a rear end portion of said ram [4] is pivotable joint with a lower end portion of said supporting member [5], a rear end portion of said bracket for saw unit [6] is pivotable joint with an upper portion of said supporting member [5].

2. A sliding miter saw of claim 1, wherein said guiding groove is along the diametrical direction of said turntable [2] and through said turntable [2], a front end portion of said ram [4] is beyond the edge of said turntable [2] when said ram is sliding to its most front position.

3. A sliding miter saw of claim 1, wherein an elongate slot [15] for receiving said saw blade provided in a front portion of said ram [4] and lying under said saw blade [8], and receiving said saw blade when said saw unit pivoted downwardly.

4. A sliding miter saw of claim 1, wherein each side of the upper surface of said base [1] respectively pivotable connecting with an end portion of an additional supporting member [9], said additional supporting member [9] is horizontal and another end portions of said additional supporting members [9] extend beyond said base [1].

5. A sliding miter saw of claim 4, wherein an elastic member [10] is provided on said additional supporting member [9], said elastic member [10] giving said front end portion of said additional supporting member [9] a trend always towards a front position.

6. A sliding miter saw of claim 4, wherein the upper surface of said base [1] provides with guiding groove [16] for additional supporting member which extend along the circumferential direction of said base for guiding additional supporting member [9], supporting foot [19] of said additional supporting member is received in said guiding groove [16] for additional supporting member.

DESCRIPTIONS

A SLIDING MITER SAW

Field of the invention

The present invention relates to a sliding miter saw.

Background

In the prior art, US5239906 has disclosed a miter saw, which comprises a base, sliding member, guiding means, sliding device etc, said guiding means is a cantilever, said sliding device is slideable on said guiding means back and forth, however, one deadly drawback of this structure is the rigidity of said cantilever is very poor as a heavy saw unit will slide and be operated on it.

Invention Content

The present invention is to provide a new, improved and reliable sliding miter saw, particularly provides a sliding miter saw which having a high rigidity supporting device for the saw unit.

The technical proposal of the present invention is: a sliding miter saw, which comprises:

a base device, which including a base and a turntable which is pivotable connecting with said base;

a motor, which including an armature having a first rotating axis;

a saw blade, which having a second rotating axis;

a bracket for saw unit, on which said saw blade and said motor are provided, said first rotating axis is parallel with and spaced from said second rotating axis, said motor connected with said saw blade via transmission device;

a supporting member, on which a hinge pivot shaft is provided and said bracket for saw unit hinging with said supporting member;

said sliding miter saw also includes a ram, a guiding groove which is provided in said turntable in a substantial diametrical direction, said ram is slideable received in said guiding groove, a rear end portion of said ram is pivotable joint with a lower end portion of said supporting member, a rear end portion of said bracket for saw unit is pivotable joint with a upper portion of said supporting member.

The present invention owns the following advantages:

A ram sliding on a turntable, the supporting member for supporting saw unit is able to be made thick and able to get a perfect rigidity, a front end portion of said ram always lies under said saw blade, said ram moves backward in synchronism when said saw unit slides backward, so this structure is able to spare the operating space and freight space.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 shows a left side view of this invention in which the saw unit is pushed out;

FIG. 2 shows a left side view of this invention in which the saw unit is pulled back;

FIG. 3 shows a top view of this invention in which the ram is pushed out; (taking off the saw unit and the supporting member)

FIG. 4 shows a top view of this invention in which the ram is pulled back; (taking off the saw unit and the supporting member)

FIG. 5 shows a top view of this invention in which the ram is miter arranging; (taking off the saw unit and the supporting member)

FIG. 6 shows a section view in line A-A of FIG. 4;

FIG. 7 shows a section view in line B-B of FIG. 4;

In all the FIGS, the numbers respectively indicate to:

[1]、 a base; [2]、 a turntable; [3]、 fence; [4]、 a ram; [5]、 a supporting member; [6]、 bracket for saw unit; [7]、 hood for saw blade; [8]、 a saw blade; [9]、 additional supporting member; [10]、 a torsion spring; [11]、 an axis of said turntable; [12]、 an axis of said supporting member; [13]、 a locking member; [14]、 an axis of bracket for saw unit; [15]、 an elongate slot; [16]、 guiding groove for said additional supporting member; [17]、 a first fixing member; [18]、 a second fixing member; [19]、 supporting foot; [4']、 a ram device; [17']、 a first fixing member of the second embodiment; [18']、 a second fixing member of the second embodiment;

DESCRIPTION OF THE PREFERED EMBODIMENTS

See the attached Figs, the present invention is a sliding miter saw, which comprises:

a base device, which including a base [1] and a turntable [2] which is pivotable connecting with said base [1];

a motor (not shown in Figs), which including an armature having a first rotating axis;

a saw blade [8], which having a second rotating axis;

a bracket for saw unit [6], on which said saw blade [8] and said motor are provided, said first rotating axis is parallel with and spaced from said second rotating axis, said motor is connected with said saw blade [8] via transmission device, whereby the driving power is able to be transmitted to said saw blade [8]; said sliding miter saw also includes a ram [4], a guiding groove is provided in said turntable [2] in a substantial diametrical direction, said ram [4] is slideable received in said guiding groove, linear bearing is provided in said guiding groove, see Fig 6, a first fixing member [17] and a second fixing member [18] which fixed on said turntable [2] restrain the up-and-down movement of said ram [4], whereby a smooth sliding movement can be obtained between said ram [4] and said guiding groove, a rear end portion of said ram [4] is pivotable joint with a lower end portion of said supporting member [5], a rear end portion of said bracket for saw unit [6] is pivotable joint with an upper portion of said supporting member [5].

Said guiding groove is through the whole of said turntable [2] along the diametrical direction of said turntable [2], a front end portion of said ram [4] is beyond said turntable [2] when said ram [4] is sliding to its most front position (as shown in Fig 2). An elongate slot [15] for receiving said saw blade providing on a front portion of said ram [4] and lying under said saw blade [8], and receiving said saw blade when said saw unit pivoted downwardly. Each side of the upper surface of said base [1] respectively connect with a end portion of said additional supporting member [9], said additional supporting members [9] are horizontal, another end portion of said additional supporting members [9] extend beyond said base [1], said additional supporting members [9] are generally used in the states shown in Fig 4 and Fig 2, and which able to be used together with said ram [4] to supporting workpiece. Torsion spring [10] surround the rotatable axis of said additional supporting members [9], an end portion of said torsion spring [10] connects with said additional supporting member [9], and the other end portion of said torsion spring [10] connect with said base [1]. Under condition shows in Fig 5, when said bracket for saw unit rotating, said turntable [2] and said ram [4] rotate synchronous with said bracket for saw unit, so said ram [4] is possible to push front end portions of said additional supporting members [9] left side. The upper surface of said base [1] is provide with guiding groove [16] for said additional supporting member [19] in the circumference direction, supporting foots [19] disposed on said

additional supporting members [9] moveable received in said guiding groove for said additional supporting member [16].

证 明

本证明之附件是向本局提交的下列专利申请副本

申 请 日： 2002 10 31

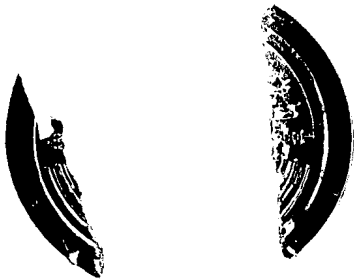
申 请 号： 02 1 38579.3

申 请 类 别： 发明

发明创造名称： 滑动式切断锯

申 请 人： 苏州宝时得电动工具有限公司

发明人或设计人： 王新



中华人民共和国
国家知识产权局局长

王景川

2003 年 10 月 16 日

权 利 要 求 书

1、一种滑动式切断锯，包括

底座装置，该底座装置包括底座[1]、与底座[1]枢轴连接的转盘[2]；

马达，该马达包含一个有旋转轴线的电枢；

锯片[8]，该锯片[8]有一个旋转轴线；

机头架[6]，所述的锯片[8]及所述的马达都设置在该机头架上，所述的马达的电枢旋转轴线与锯片的旋转轴线之间有一段距离并且相互平行，所述的马达与锯片[8]之间通过传动装置相连接；

支持件[5]，支持件上部有铰接枢轴，机头架[6]通过枢轴与支持件铰接；

其特征在于：它还包括滑枕[4]，在转盘[2]的直径方向上开有滑枕导槽，所述的滑枕[4]可滑动地插在滑枕导槽内，所述的滑枕[4]的后端部与支持件[5]的下部枢轴连接，所述的机头架[6]的后端部与支持件[5]的上部枢轴连接。

2、根据权利要求1所述的滑动式切断锯，其特征在于：所述的滑枕导槽沿着转盘[2]的直径方向贯穿整个转盘[2]，在滑枕[4]向前滑动到极限位置时，所述的滑枕[4]的前端部伸出转盘[2]之外。

3、根据权利要求1所述的滑动式切断锯，其特征在于：所述的滑枕[4]的前部开有锯片长槽[15]，该锯片长槽[15]位于所述的锯片[8]的下方，并在锯片[8]下压时，锯片[8]插入所述的锯片长槽[15]内。

4、根据权利要求1所述的滑动式切断锯，其特征在于：所述的转盘[2]的上表面两侧分别枢轴连接有附加支撑件[9]的一端部，所述的附加支撑件[9]水平设置，其另一端部向前伸出转盘[2]之外。

5、根据权利要求4所述的滑动式切断锯，其特征在于：所述的附加支撑件[9]上设有弹性复位元件[10]，该弹性复位元件有始终使附加支撑件[9]的前端部位于向前方的位置上的趋势。

6、根据权利要求4所述的滑动式切断锯，其特征在于：所述的底座[1]的上表面设有沿圆周方向延伸的附加支撑件导槽[16]，所述的附加支撑件[9]上的支撑脚[19]位于该附加支撑件导槽[16]内。

说明书

滑动式切断锯

技术领域

本发明涉及一种切断锯。

背景技术

美国专利 **US5239906** 公开了一种切断电圆锯专利，它包括底座、滑动件、导向装置、滑动装置等，该导向装置为一个悬臂，滑动装置可在该导向装置上前后方向滑动，但是，这种悬臂由于需要机头部分在上面滑动，因此其刚性较差，直接影响了锯片对工件的加工精度。

发明内容

本发明的目的在于提供一种机头架的支撑装置具有较高刚性的滑动式切断锯。

本发明的技术方案是：一种滑动式切断锯，包括

底座装置，该底座装置包括底座、与底座枢轴连接的转盘；

马达，该马达包含一个有旋转轴线的电枢；

锯片，该锯片有一个旋转轴线；

机头架，所述的锯片及所述的马达都设置在该机头架上，所述的马达的电枢旋转轴线与锯片的旋转轴线之间有一段距离并且相互平行，所述的马达与锯片之间通过传动装置相连接；

支持件，支持件上部设有铰接枢轴，机头架通过枢轴与支持件相连接；

它还包括滑枕，在转盘的直径方向上开有滑枕导槽，所述的滑枕可滑动地插在滑枕导槽内，所述的滑枕的后端部与支持件的下部相连接，所述的机头架的后端部与支持件的上部相连接。

本发明与现有技术相比具有下列优点：

通过滑枕在转盘上滑动，因此支撑机头架的支持件可以作得粗大且刚性较好，滑枕的前部始终在锯片的下方，在锯片向后滑动后，滑枕也跟着向后滑动，工作时可以节省转盘的占用空间。

附图说明

附图 1 为本发明的一种使用位置时的左视图；

附图 2 为本发明的另一种使用位置时的左视图；

附图 3 为本发明的一种使用位置时的俯视图（去掉机头架及支持件时）；

附图 4 为本发明的另一种使用位置时的俯视图（去掉机头架及支持件时）；

附图 5 为本发明的锯片斜切时的俯视图（去掉机头架及支持件时）；

附图 6 为附图 4 的 A-A 方向剖视图；

附图 7 为附图 4 的 B-B 方向剖视图； 其中：

[1]、底座； [2]、转盘； [3]、工件护栏； [4]、滑枕； [5]、支持件； [6]、机头架； [7]、锯片护罩； [8]、锯片； [9]、附加支撑件； [10]、扭簧； [11]、转盘轴； [12]、支持件转轴； [13]、锁定件； [14]、机头架转轴； [15]、锯片长槽； [16]、附加支撑件导槽； [17]、压板； [18]、压板； [19]、支撑脚；

具体实施方式

参见附图，一种滑动式切断锯，包括

底座装置，该底座装置包括底座[1]、与底座[1]枢轴连接的转盘[2]；

马达（图中没有画出），该马达包含一个有旋转轴线的电枢；

锯片[8]，该锯片[8]有一个旋转轴线；

机头架[6]，所述的锯片[8]及所述的马达都设置在该机头架上，所述的马达的电枢旋转轴线与锯片的旋转轴线之间有一段距离并且相互平行，所述的马达与锯片[8]之间通过传动装置相连接，使得马达的动力能传递到锯片[8]上；它还包括滑枕[4]，在转盘[2]的直径方向上开有滑枕导槽，所述的滑枕[4]可滑动地插在滑枕导槽内，所述的滑枕导槽上设有直线轴承，使得滑枕与滑枕导槽能够更好地滑动连接，所述的滑枕[4]的后端部与支持件[5]的下部相连接，所述的机头架[6]的后端部与支持件[5]的上部相通过机头架转轴[14]相枢轴连接。

所述的滑枕导槽沿着转盘[2]的直径方向贯穿整个转盘[2]，在滑枕[4]向前滑动到极限位置时（如附图 2 所示），所述的滑枕[4]的前端部伸出转盘[2]之外。所述的滑枕[4]的前部开有锯片长槽[15]，该锯片长槽[15]始终位于所述的锯片[8]的下方，并在锯片[8]下压时，锯片[8]插入所述的锯片长槽[15]内。所述的底座[1]的上表面两侧分别枢轴连接有附加支撑件[9]的一端部，所述的附加支撑件[9]水平设置，其另一端部向前伸出转盘[2]之外，所述的附加支撑件[9]一般在附图 4 及附图 2 所示的状态下使用，可与滑枕[4]共同用于支撑被加工的工件。所述的附加支撑件[9]的转动轴上套有扭簧[10]，该扭簧[10]的一端与附加支撑件[9]相连接，扭簧[10]的另一端与转盘[2]相连接。在附图 5 所示的状态下，由于锯片转动，因此转盘[2]及滑枕[4]也跟着转动，则滑枕[4]可把附加支撑件[9]的前端部推向左侧。所述的转盘[2]的上表面设有沿圆周方向延伸的附加支撑件导槽[16]，所述的附加支撑件[9]上的支撑脚[19]位于该附加支撑件导槽[16]内。

说明书附图

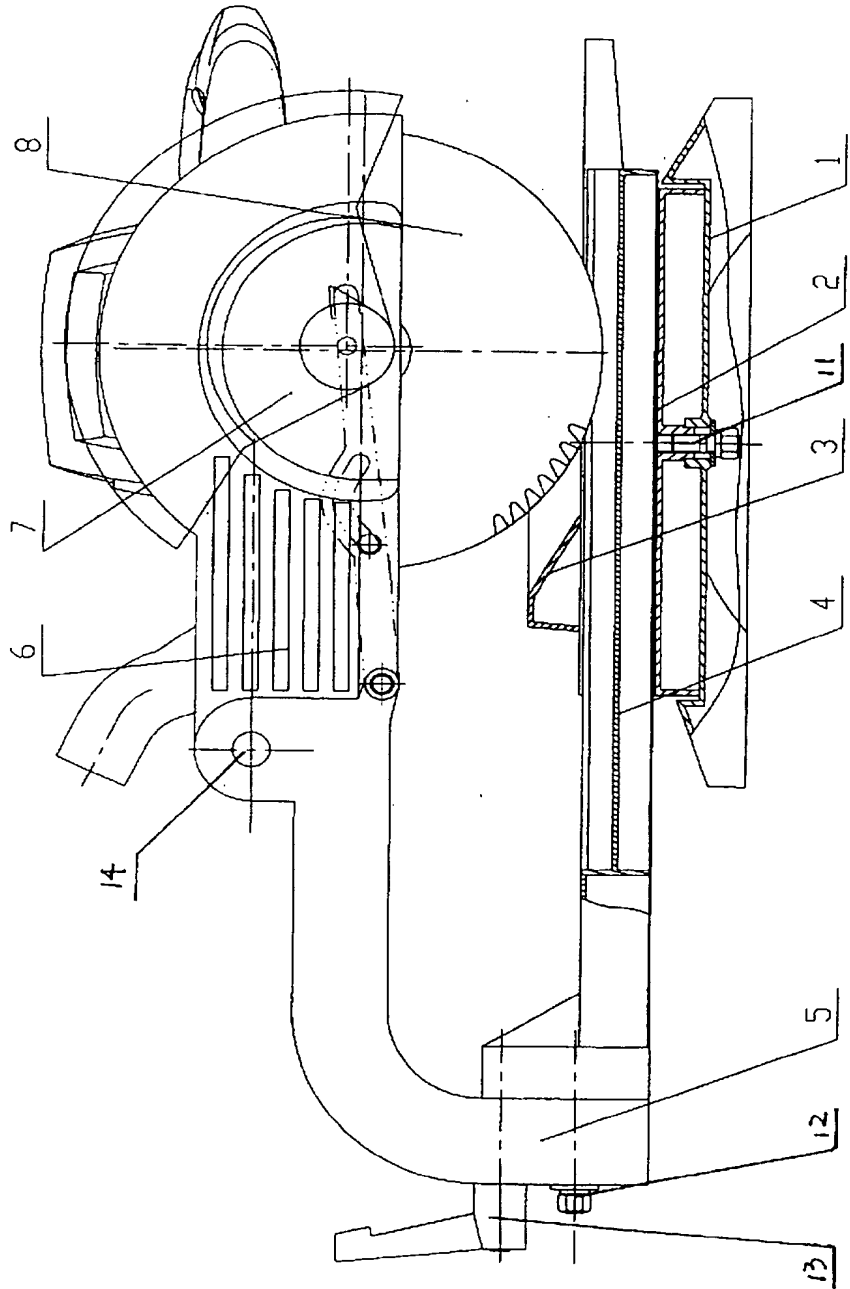


图 1

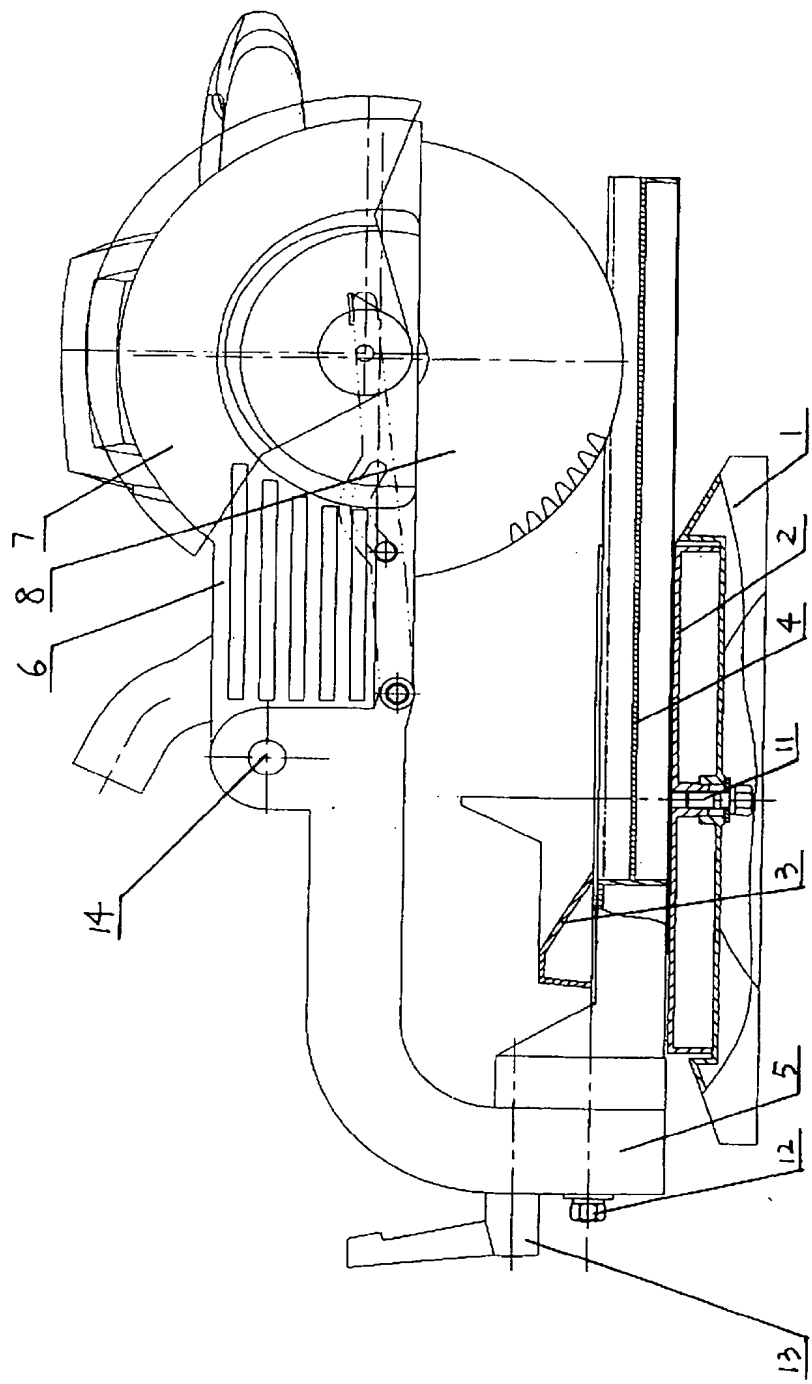
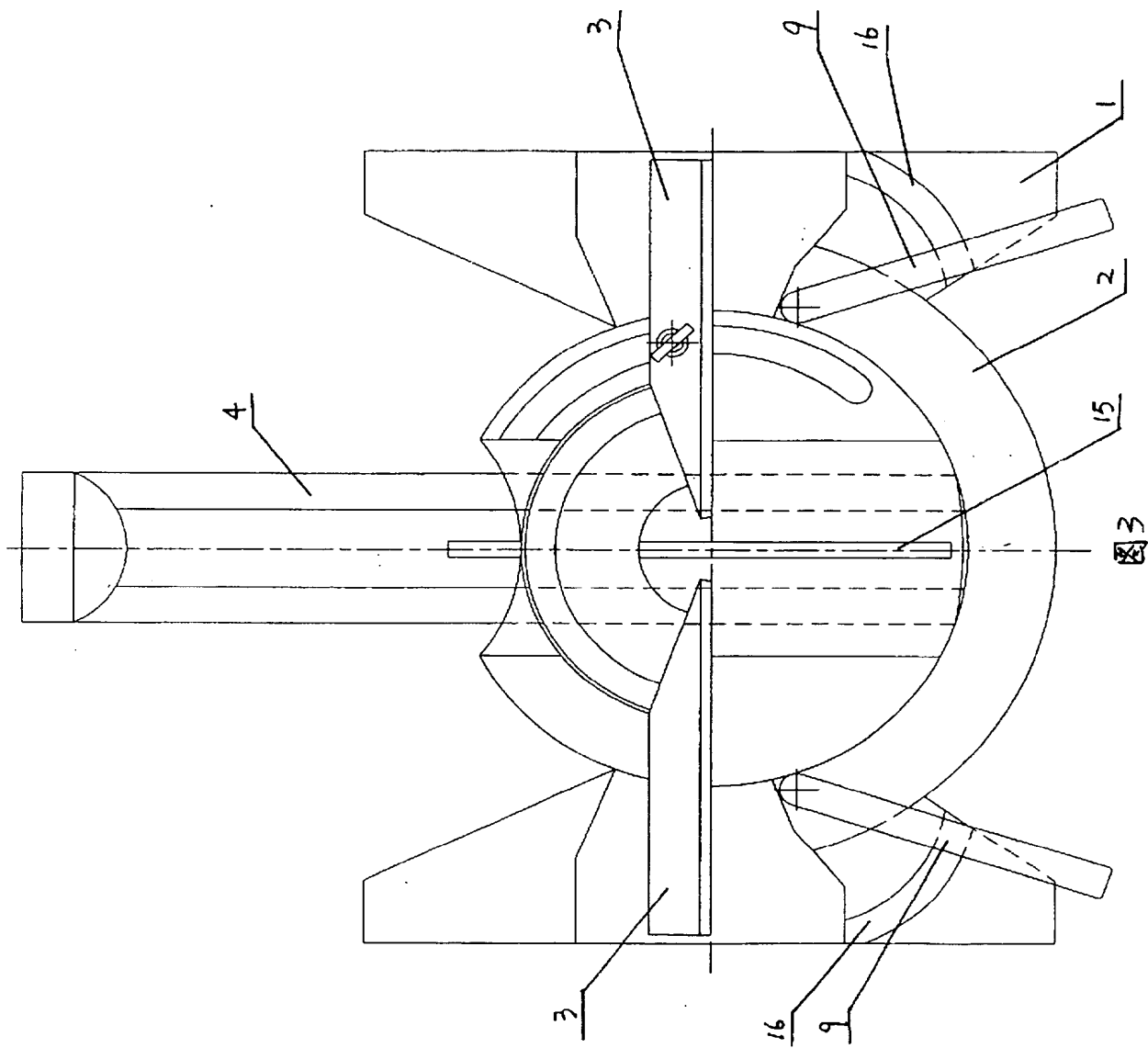
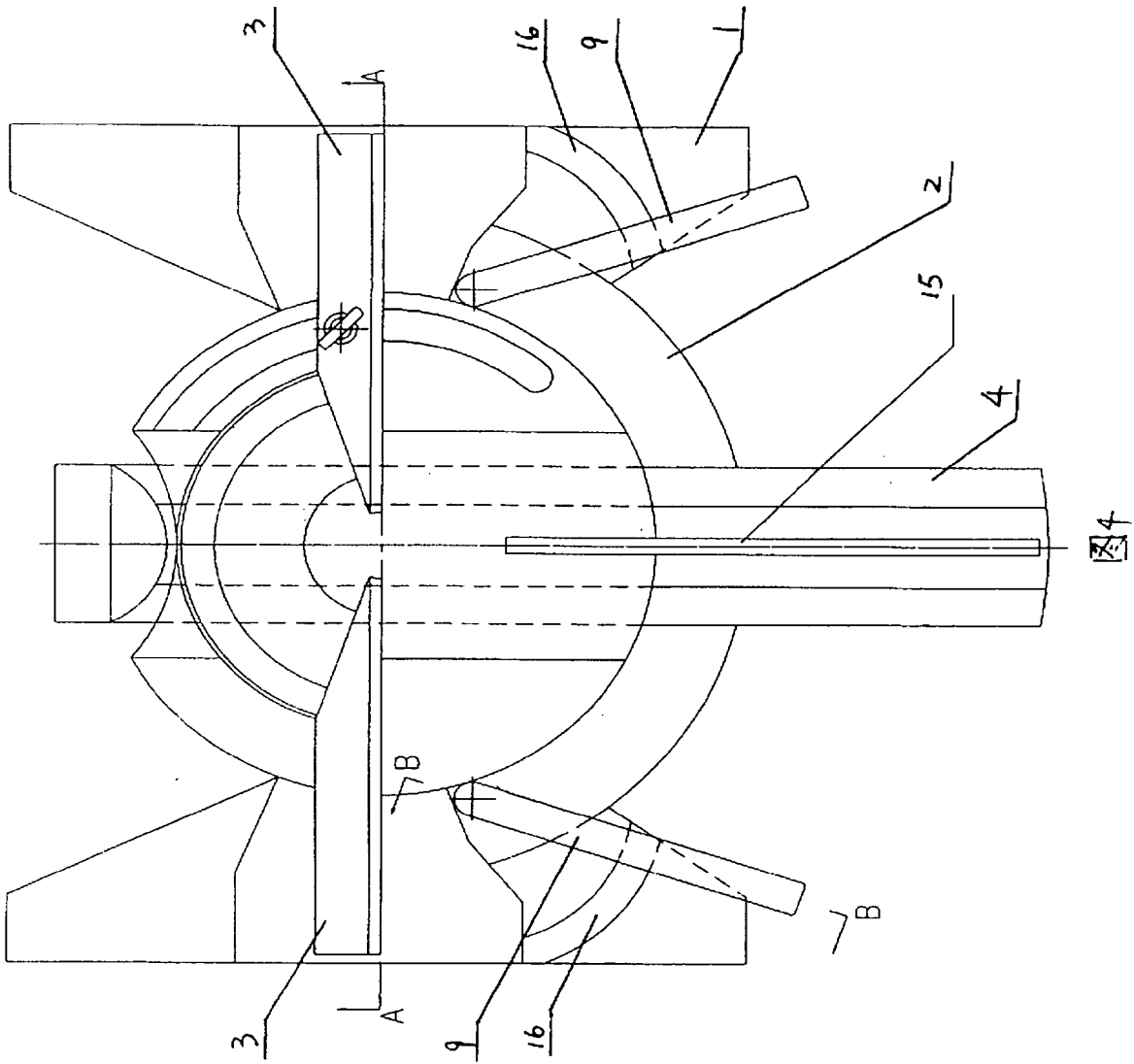


图 2





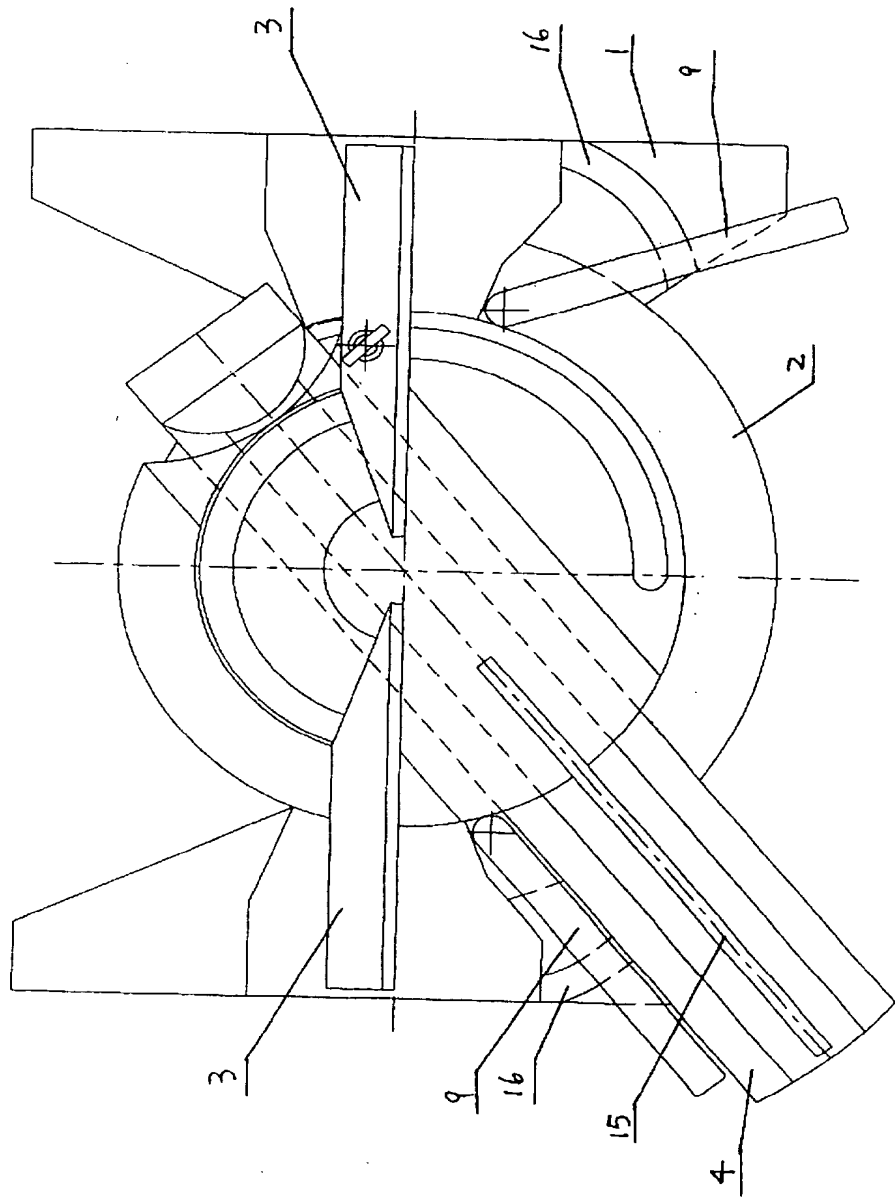


图5

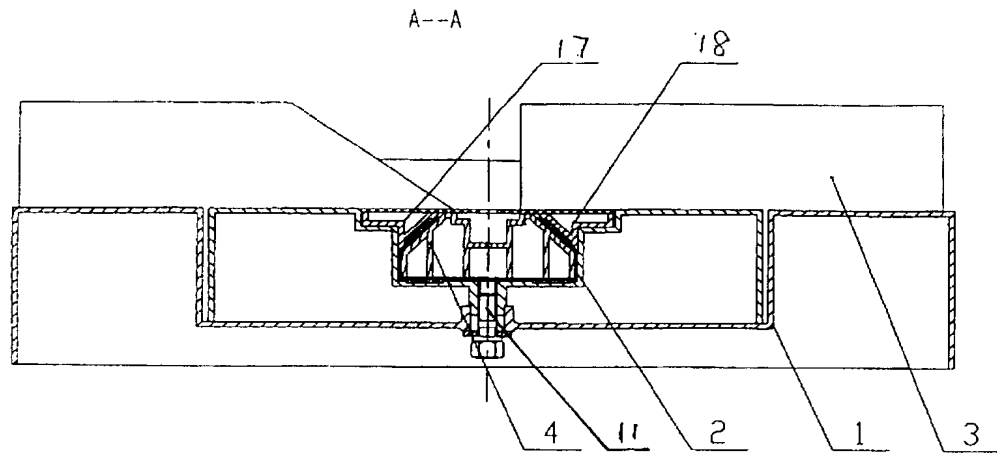


图6

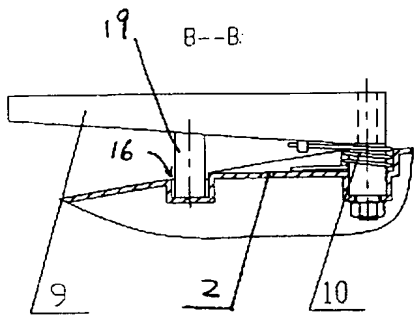


图7